Tracheal diverticulum: An atypical presentation

Anshul Srivastava, BS, Julian Guitron, MD, and Valerie A. Williams, MD

A 46-year-old nonsmoking man was seen with recurrent episodes of hiccups and burping occurring for a 1-year period. A barium esophagogram showed external compression and deviation of the esophagus by an air-filled structure at the level of the thoracic inlet. No opacification of this structure with barium was seen (Figure 1). Computed tomographic scan of the chest showed that a septated cystic structure located to the right of the trachea and measuring 6 × 4.7 cm was causing compression of the upper esophagus and slight deviation of the trachea. A thin connection with the right posterolateral aspect of the trachea was demonstrated, consistent with tracheal diverticulum (Figure 2).

Esophagoscopy showed no sign of an esophageal diverticulum. Bronchoscopy revealed a 3-mm ostium at the junction between the membranous and cartilaginous trachea approximately 7 cm proximal to the carina (Figure 3). Examination of the ostium with the endotracheal tube positioned proximally caused the patient's neck to swell, confirming tracheal connection to the cyst.

Resection of the diverticulum was approached through a cervical collar incision. The cyst was found to be in close apposition with the right side of the trachea. The lateral aspect extended past the right carotid artery and deep to the level of the spine. Medially, the right recurrent laryngeal nerve was noted to be intimately adherent to the cyst. Once fully mobilized, the cyst was opened and the connection with the trachea was identified from within. A figure-of-eight polyglactin suture was placed to oversew the opening. The cyst was sharply excised circumferentially, preserving the recurrent laryngeal nerve. With the endotracheal tube proximal to our repair, the neck was filled with water and no air leak was noted. A fat pedicle from the neck was used to buttress the repair.

Paratracheal diverticula or cysts are relatively rare, with a reported incidence of 1% in autopsy series. They most commonly occur in the right paratracheal region and can be subdivided into the categories of congenital and acquired.[1] Congenital cysts are smaller and contain

FIGURE 1. A barium esophagogram shows deviation of the esophagus by an air-filled structure.

respiratory epithelia, smooth muscle, and cartilage. Acquired cysts are larger and are composed of respiratory epithelia only. Congenital cysts are thought to develop from developmental defects in tracheal cartilage. Acquired cysts are believed to result from long-standing increased airway pressures, as can be seen in patients with chronic cough. Elevated pressures result in herniation of tracheal wall at natural areas of weakness, between cartilaginous rings posterolaterally at the cartilage membranous junction.[2] Pathologic evaluation in the case presented revealed benign respiratory-type epithelium with underlying fibroadipose tissue, consistent with an acquired cyst.

Most patients have no symptoms. When symptoms do occur, chronic cough, dyspnea, stridor or recurrent episodes of tracheobronchitis are common.[3] Symptoms of dysphagia, odynophagia, and choking have also been described.[2,4] Recurrent episodes of hiccups and burping, as seen in this patient, have not been previously reported. The possibility that the diverticulum was an incidental finding was considered. Because no other cause was identified, the decision was taken to proceed with resection because of the potential to ameliorate

From the Division of Thoracic Surgery, Department of Surgery, University of Cincinnati Medical Center, Cincinnati, Ohio.

Disclosures: Authors have nothing to disclose with regard to commercial support.
Received for publication Nov 14, 2013; revisions received March 1, 2014; accepted for publication March 12, 2014; available ahead of print April 9, 2014.

Address for reprints: Valerie A. Williams, MD, Division of Thoracic Surgery, Department of Surgery, University of Cincinnati Medical Center, 231 Albert Sabin Way, Cincinnati, OH 45267 (E-mail: valerie.williams@uc.edu).

J Thorac Cardiovasc Surg 2014;148:3244-5
0022-5223/$36.00

http://dx.doi.org/10.1016/j.jtcvs.2014.03.010

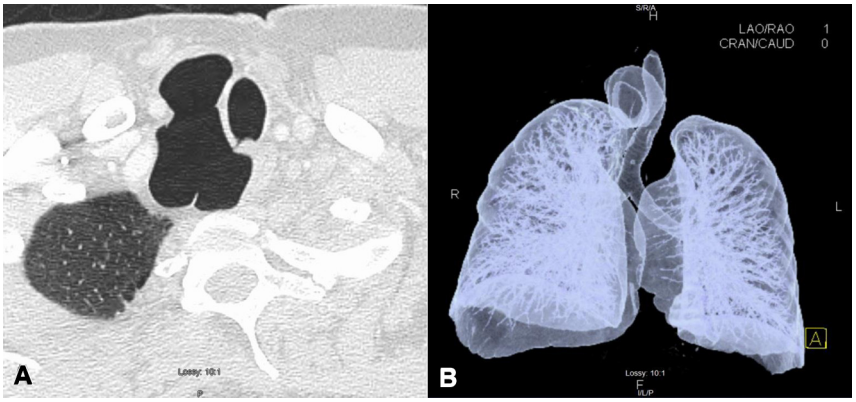

FIGURE 2. A chest computed tomographic scan (A) and a 3-dimensional reconstruction (B) show the diverticulum with a connection to the trachea.

symptoms. The patient recovered without complication, and his hiccups and burping resolved.

The differential diagnosis of a paratracheal air collection should include laryngocele, pharyngocele, esophageal diverticulum, apical herniation of the lung, and apical bullae.[1] Computed tomography, barium esophagography, esophagoscopy, and bronchoscopy all aid in diagnosis. In general, intervention is typically reserved for those with symptoms.

References

1. Goo JM, Im J, Ahn JM, Moon WK, Chung JW, Park JH, et al. Right paratracheal air cysts in the thoracic inlet: clinical and radiologic significance. *AJR Am J Roentgenol*. 1999;173:65-70.
2. Smelley CL, Bowen R, Nathan CA. Intermittently symptomatic tracheal diverticulum: a case of a rare clinical phenomenon. *Ear Nose Throat J*. 2011; 90:E10-2.
3. Early EK, Bothwell MR. Congenital tracheal diverticulum. *Otolaryngol Head Neck Surg*. 2002;127:119-21.
4. Ahn JH, Jeong JY, Suh JH, Kim KJ. A rare cause of respiratory distress: a huge tracheal diverticulum. *Ann Thorac Surg*. 2012;93:e135.

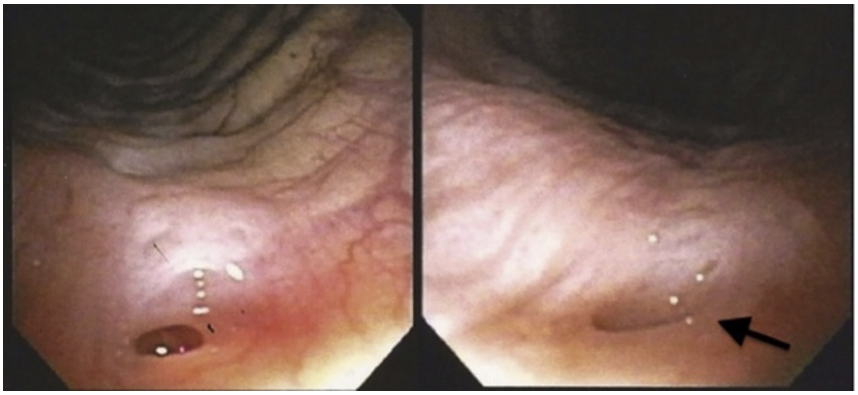

FIGURE 3. Bronchoscopic views of the ostium located at the membranous-cartilaginous junction of the trachea.